

ART. XIV.—*On some Rocks from the fairway of Port Phillip Heads.*

BY F. E. GRANT AND E. O. THIELE.

[Read 9th October, 1902.]

Blasting operations were recently carried on at Port Phillip Heads under the supervision of the Engineer for Ports and Harbours with the view of deepening the Channel, so as to render the passage safer for ocean going vessels, and by this operation large blocks of stone were obtained containing numerous embedded fossils.

A block of this stone was obtained by the writers, and was found to consist of coarse sandy limestone of a creamy colour, composed mainly of a mixture of quartz grains and comminuted shell remains. On the side of the fresh fracture it was less compact and showed indistinct lines of stratification. This part of the rock was full of shell remains, all, unfortunately, more or less broken and corroded. By far the commonest form was a *Bankivia* sp., but on close examination we were able to identify the following :—

*Bankivia* sp. (aff. *varians*).

*Mesodesma elongata*.

*Chione striatissima*.

*Mytilicardia aviculina*.

*Corbula* sp.

*Tellina* sp.

*Glycimeris* sp.

*Echini* spines.

A sample of the rock treated with acid was found to consist of a little over 50 per cent. of carbonate of lime, the insoluble residue being grains of quartz—angular for the most part, with occasional more or less rounded fragments intermixed.

The chart shows that a rocky platform or reef extends from Point Nepean to Point Lonsdale at a depth along that line of

little more than forty feet at the most. This reef ends abruptly on the inner side as is shown by the rapid change to deeper water, but on the seaside it shelves away much more gradually. The block of stone under consideration came from a position about midway between the Heads and a little on the seaside of a line joining these two points of land and from a depth of thirty-two feet. The outflowing tide meets suddenly with this submarine shelf, and the rough choppy sea, well-known as the "Rip," is the result. This disturbed state of the Channel is rendered more marked when a strong south-westerly wind is blowing. The tidal current as it rushes out and in through the entrance flows at a rate of about eight miles an hour, so that the scour is considerable. Enormous quantities of sand, loosened from the neighbouring beaches and sand banks inside the entrance, are at times carried backwards and forwards through the Channel, but it is hardly likely that the rock under consideration has resulted from the deposition of such sand under present conditions, especially where the current runs fastest.

It seems probable that the limestone represents a shallow water marine formation which may pass under the Dune limestone on either side.

If such be the case, taking into consideration the recent record of an extinct marsupial from the Dune rock<sup>1</sup>, this deposit may represent in age the *Bankivia* beds on the Glenelg, recorded by Mr. Dennant as Pleistocene.<sup>2</sup>

We have to thank Captain Stalker of the Pilot Service, Mr. McLean, the Chief Engineer of Ports and Harbours, and Mr. T. H. Smith, Marine Surveyor, for opportunities afforded of making these observations.

---

<sup>1</sup> Proc. Roy. Soc. Vic., vol. xiv., p. ii., N.S., p. 139.

<sup>2</sup> Trans. and Proc. Roy. Soc. Vic., vol. xxiii., p. 225. 1887.